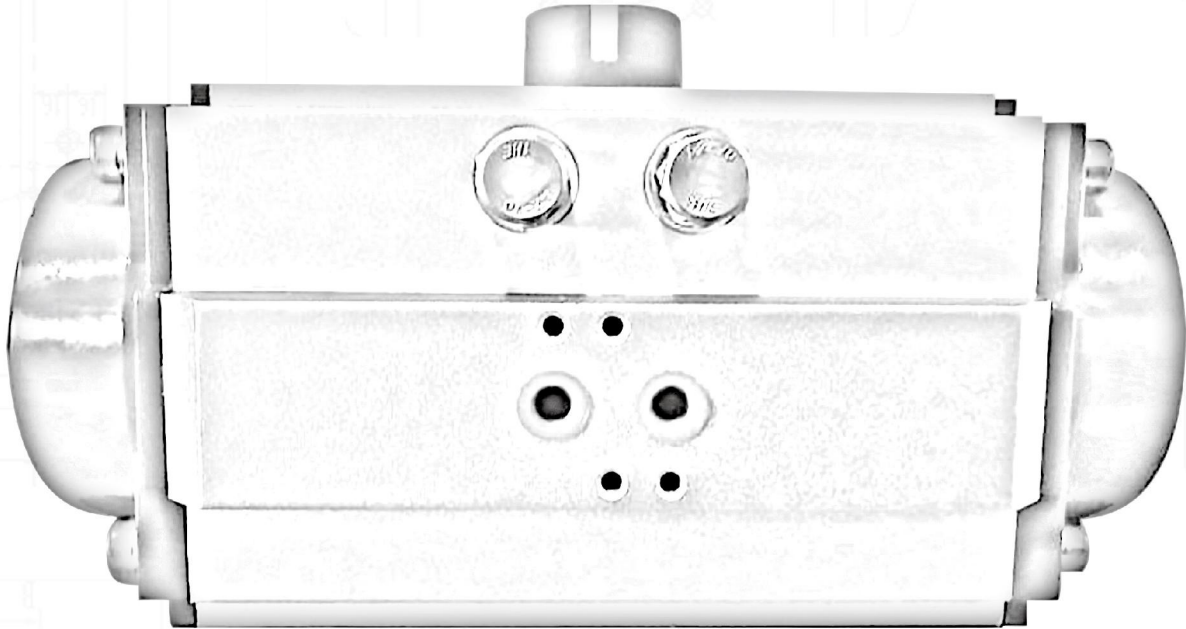


# WZIFLOW CONTROL

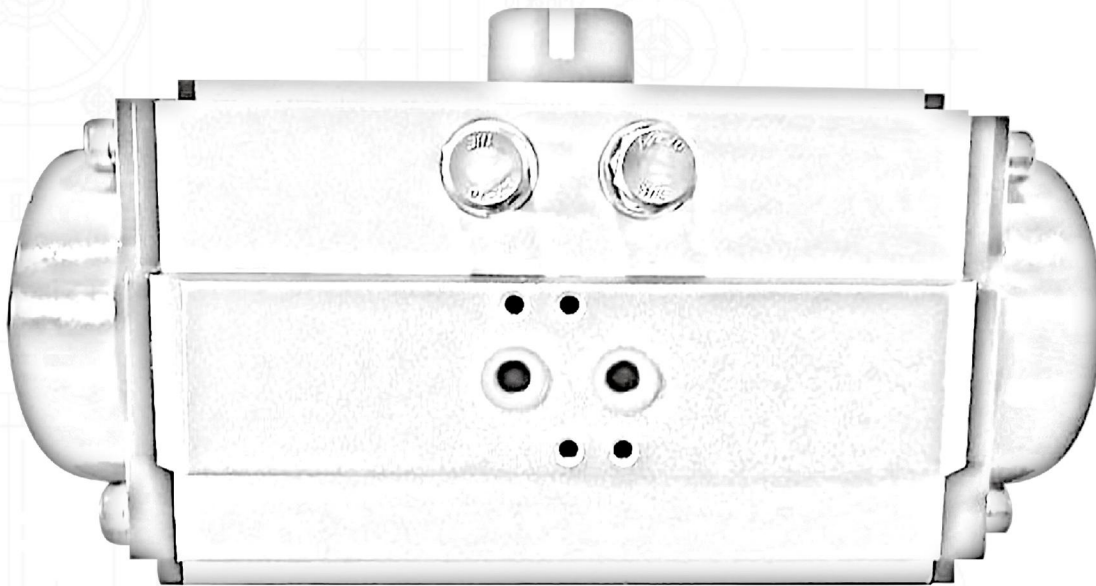


## SERIES RB

### RACK AND PINION ACTUATOR

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## SERIES RB FEATURES

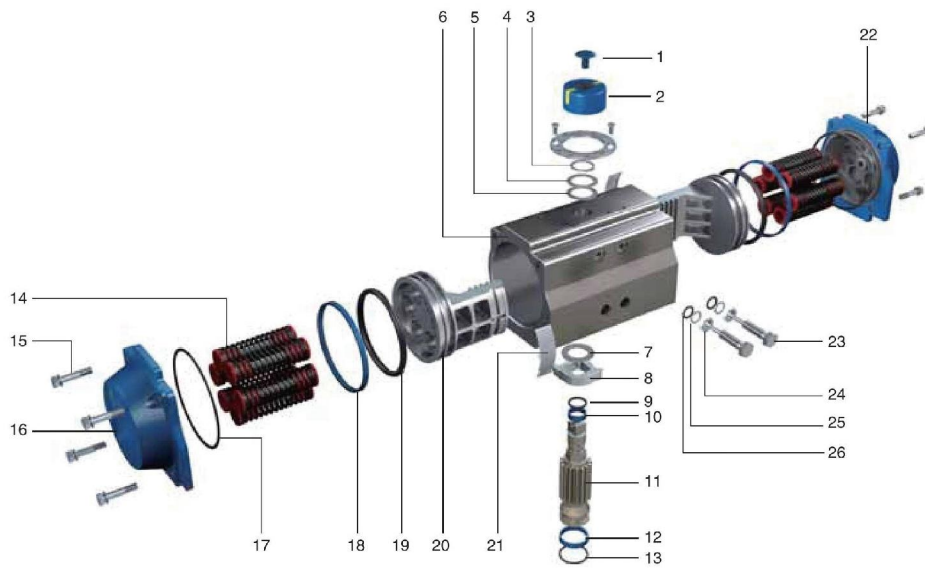
- Rack and Pinion Actuators
- Double-Acting (air to open, air to close)
- Single-Acting, Spring-Return (air to open or close, spring return open or close)
- Bi-Directional Travel Stops
- Optional Spring Cartridges for Retrofit to Spring-Return from Double Acting
- Direct-Mount Design - ISO 5211/DIN 3337/GB 12223-89
- Various Control Options-Solenoids, Limit Switches and Positioners-NAMUR Mounting Available

# MATERIALS OF CONSTRUCTION

## SPECIFICATIONS

### Pneumatic Actuator

- **Pressure Rating:** Max Pressure 116 psig (8 Bar)
- **Temperature Range:** Standard: -20°C to 98°C Low: -40°C to 80°C High: -15°C to 150°C  
-4°F to 200°F -40°F to 176°F 5°F to 302°F
- **Visual Position Indicator**
- **Accessory Mounting Holes** per VDE/VDI 3845



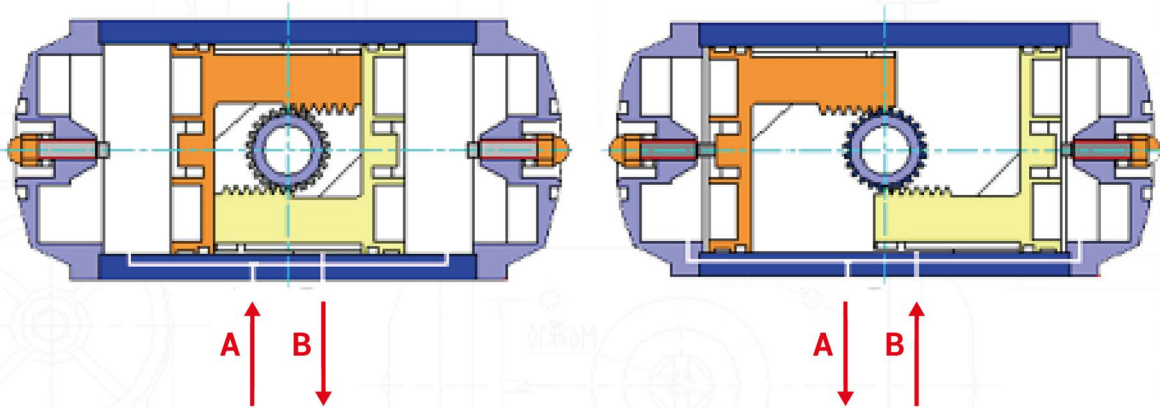
## COMPONENTS AND MATERIALS

Table 1: Key Components

Item Name	Material
Body	Extruded Anodized Aluminum Alloy, Optional Powder Coat
End Caps	Powder-Coated Die Cast Aluminum
Piston	Die Cast Aluminum
Pinion	Nickel Plated Alloy Steel
Shaft Bearing	NYLON 66
Piston Bearing	PTFE/ Bronze Composite
O-Rings	Silicone Rubber, Buna-N, Fluorosilicon
Fasteners	Stainless Steel
Springs	Spring Steel, Protective Coating

# DOUBLE ACTING ACTUATORS

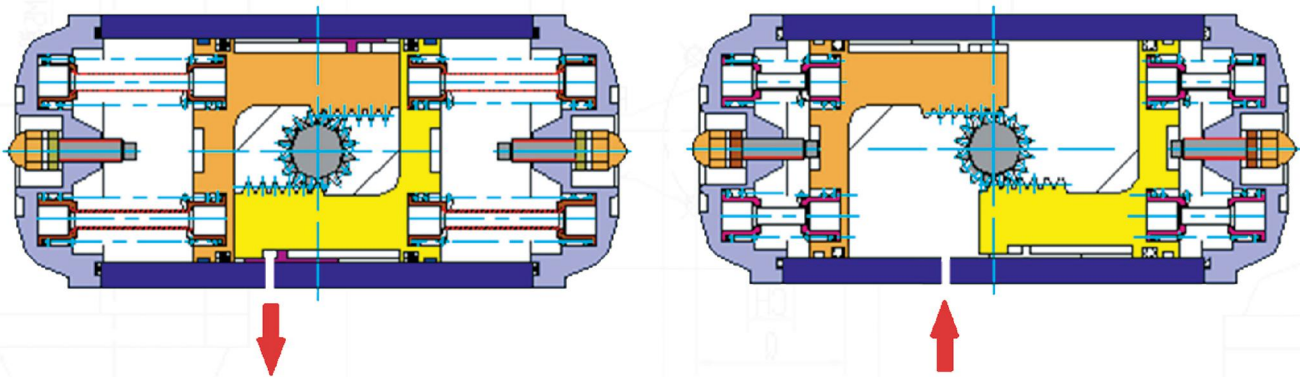
## POSITION OF ACTUATOR OPEN AND CLOSE



- A- When air pressure is applied to flow through the "A" port the racks are pushed toward each other rotating the pinion in a clockwise motion.
- B- When air pressure is applied to flow through the "B" port the racks are pushed away from each other rotating the pinion in a counter-clockwise motion.

# SPRING RETURN ACTUATORS

## POSITION OF SPRING RETURN PNEUMATIC ACTUATOR



The output torque of the spring return actuator during operation is not constant, but varies gradually, because the spring accumulates energy during compression and the torque decreases as the spring is reset. The output torque of the single acting spring return actuator is related to the number of spring sets installed and the available pressure of the air supply must be clearly defined when the user selects it.

Proper selection for an actuator is as follows:

1. Determine the torque required for the valve
2. Multiply the required torque by a safety factor of 1.25
3. According to the air supply pressure and the torque obtained in step 2, the spring return actuator required is checked to ensure the spring torque and the output torque of air to spring is greater than the torque obtained in Step 2
4. Determine the exact RB spring return actuator based on torque value from the torque tables supplied
5. Ensure that the safe torque value of the valve is not exceeded

# TORQUE OF DOUBLE ACTING ACTUATORS

**Table 2.1: Actuator Torque**

Actuator	Double Acting Actuator Torque Metric (N-m, air pressure barg)									
	2.5	3	3.5	4	4.5	5	5.5	6	7	8
32	2.9	3.4	4.0	4.6	5.3	5.9	6.5	7.1	8.3	9.5
50	8.6	10.4	12.3	14.2	16.0	17.9	19.8	21.6	25.4	29.1
63	17.4	21.2	25.0	28.7	32.5	36.3	40.1	43.9	51.4	59.0
75	27.0	32.9	38.8	44.7	50.5	56.4	62.3	68.2	79.9	91.7
80	39.7	48.3	56.9	65.6	74.2	82.8	91.4	100.1	117.3	134.6
95	55.7	67.9	80.0	92.1	104.2	116.4	128.5	140.6	164.8	189.1
100	72.0	89.3	105.0	120.6	136.3	152.0	167.6	183.3	215	246
125	129.0	160.0	188.0	215	243	271	299	327	383	439
140	196.0	208	243	278	312	347	382	417	486	555
160	264	327	384	441	499	556	613	670	785	900
190	429	518	607	697	786	875	965	1,054	1,233	1,411
200	598	723	848	973	1,097	1,222	1,347	1,471	1,721	1,970
254	928	1,122	1,315	1,508	1,702	1,895	2,089	2,282	2,669	3,056
280	1,305	1,577	1,849	2,121	2,393	2,665	2,937	3,209	3,753	4,297
300	1,679	2,029	2,379	2,729	3,079	3,429	3,779	4,129	4,829	5,528
350	2,493	3,012	3,531	4,050	4,570	5,089	5,608	6,128	7,166	8,205
400	3,798	4,589	5,381	6,172	6,963	7,755	8,546	9,337	10,920	12,502

**Table 2.2: Actuator Torque**

Actuator	Double Acting Actuator Torque Imperial (ft-lb, air pressure psig)									
	36	44	51	58	65	73	80	87	102	116
32	2.1	2.5	3.0	3.4	3.9	4.4	4.8	5.2	6.1	7.0
50	6.3	7.7	9.1	10	12	13	15	16	19	21
63	13	16	18	21	24	27	30	32	38	44
75	20	24	29	33	37	42	46	50	59	68
80	29	36	42	48	55	61	67	74	87	99
95	41	50	59	68	77	86	95	104	122	139
100	53	66	77	89	101	112	124	135	158	181
125	95	118	139	159	179	200	221	241	282	324
140	145	154	179	205	230	256	282	307	358	410
160	195	241	283	325	368	410	452	494	579	664
190	316	382	448	514	580	645	712	777	909	1,041
200	441	533	625	718	809	901	993	1,085	1,269	1,453
254	684	828	970	1,112	1,255	1,398	1,541	1,683	1,969	2,254
280	963	1,163	1,364	1,564	1,765	1,966	2,166	2,367	2,768	3,169
300	1,238	1,497	1,755	2,013	2,271	2,529	2,787	3,045	3,562	4,077
350	1,839	2,222	2,604	2,987	3,371	3,753	4,136	4,520	5,285	6,052
400	2,801	3,385	3,969	4,552	5,136	5,720	6,303	6,887	8,054	9,221

**NOTES:**

1) For sizes not shown, consult the factory











# DIMENSIONS & WEIGHTS

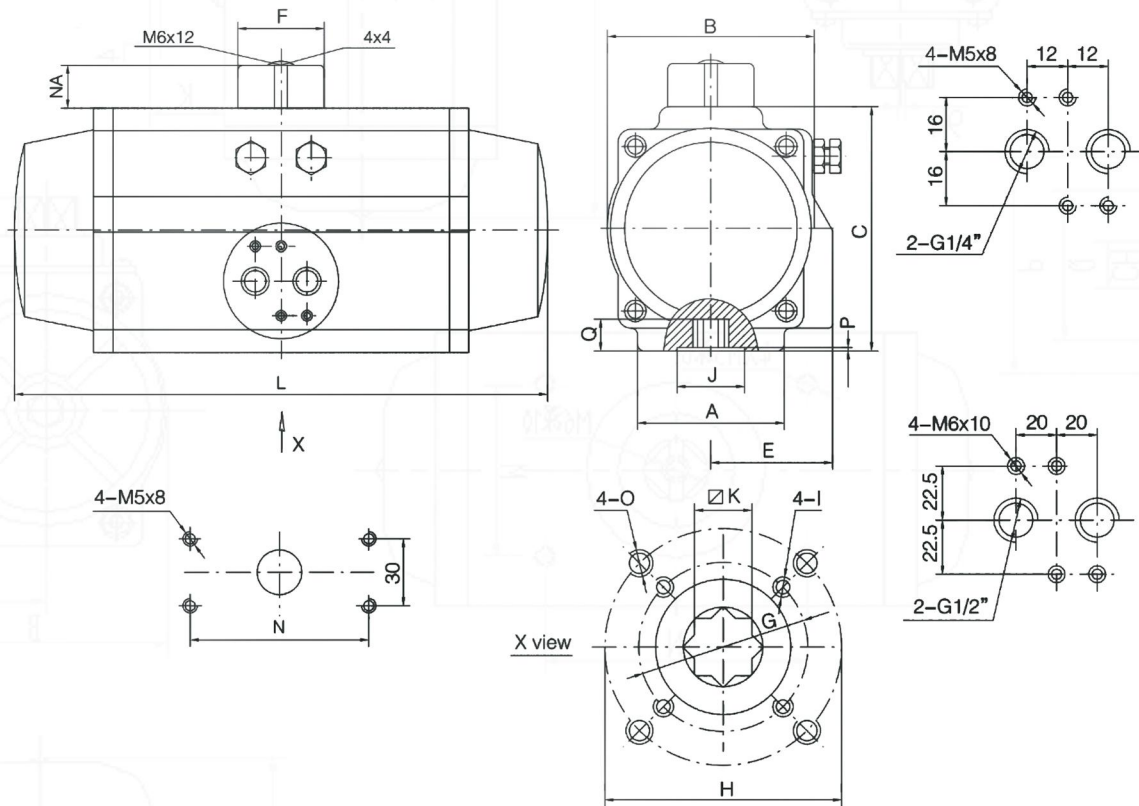


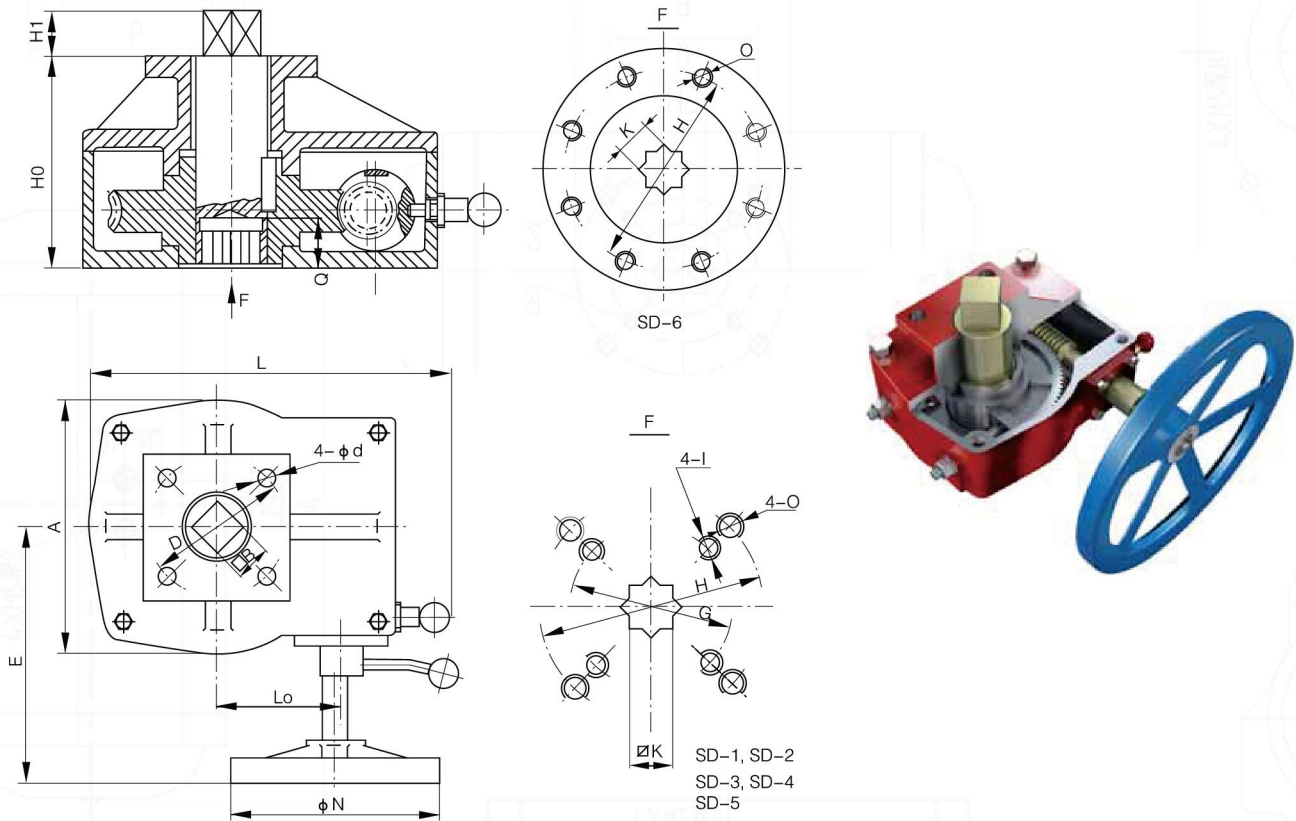
Table 3.1: Actuator Dimensions, mm

SIZE	A	B	C	E	NA	ΦF	ΦG	ΦH	I	ΦJ	∅K	L	N	O	P	Q	Air Connection
DA SR 50	52	58	70	41	20	40	-	ISO F05 φ50	-	25	11	160	80	M6x10	1	12	G1/4"
DA SR 63	64	74	89	48			ISO F05 φ50	ISO F07 φ70	M6x10	28	14	192					
DA SR 75	68	85	100	52			ISO F05 φ50	ISO F07 φ70	M6x10	32	14	218		M10x16		19	
DA SR 80	68	96	113	56			ISO F05 φ50	ISO F07 φ70	M6x10	36	17	238					
DA SR 95	95	107	123	65			ISO F07 φ70	ISO F10 φ102	M8x13	40	17	273		M10x16		19	
DA SR 100	96	120	136	70			ISO F07 φ70	ISO F10 φ102	M8x13	40	17	274					
DA SR 125	96	138	161	80			ISO F07 φ70	ISO F12 φ102	M10x16	53	22	335		M12x20		24	
DA SR 140	118	154	178	90			ISO F10 φ102	ISO F12 φ125	M10x16	53	27	370					
DA SR 160	118	176	200	103			ISO F10 φ102	ISO F12 φ125	M10x16	66	27	428		M16x25		38	
DA SR 190	136	209	232	112			ISO F10 φ102	ISO F14 φ140	M10x16	78	36	488					
DA SR 200	140	231	255	122	30	80	-	ISO F14 φ140	-	88	36	550	130	M20x28	2	50	G1/2"
DA SR 254	160	230	292	130			-	ISO F16 φ165	-	100	46	598					
DA SR 280	160	253	330	147			-	ISO F16 φ165	-	117	46	772		M20x28		50	
DA SR 300	174	326	354	175			-	ISO F16 φ165	-	125	46	784					
DA SR 350	270	380	410	195			-	ISO F25 φ254	-	134	46	845		8-M16x30		50	

**NOTES:**

1) For sizes not shown, consult the factory

# DIMENSIONS & WEIGHTS



**Table 3.2: Handwheel Dimensions, mm**

Model	H <sub>0</sub>	H <sub>1</sub>	□B	∅k	Q	A	L	N	L <sub>0</sub>	D	d	H	OX	G	IX	E	Air Connection
SD-1	93	15	14	14	16	98	147	140	42	50	7	70	M8×10	50	M6×8	135	$\frac{DA}{SR}$ 50 65 75
SD-2	108	19	17	17	19	106	170	180	53	70	9	102	4-M10×14	70	M8×10	155	$\frac{DA}{SR}$ 85 95 100
SD-3	128	25	22	22	25	136	210	250	74	102	12	125	4-M12×16	102	M10×14	190	$\frac{DA}{SR}$ 125
			27	27													$\frac{DA}{SR}$ 140 160
SD-4	159	38	36	36	40	200	254	340	97	140	18	140	4-M16×22	-	-	230	$\frac{DA}{SR}$ 190 200
SD-5	181	48	46	46	50	256	348	500	126	165	22	165	4-M20×28	-	-	292	$\frac{DA}{SR}$ 254 280 300
SD-6	228	50	46	46	50	372	430	500	186	165	22	165	4-M20×28	-	-	400	$\frac{DA}{SR}$ 350
			254	8-18	254					8-M16×22	-	-	DA 400 450				
SD-7	324	55	55	55	60	505	610	650	250	254	8-18	254	8-M16×22	-	-	495	SR 400 450

**Table 3.3: Weight**

Model	RB63		RB80		RB100		RB125		RB160		RB200		RB254		RB300		RB350	
	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
Double Acting	2	4.4	4.5	10	6.2	14	12.3	28	22.5	50	48	106	86	190	95	210	128	282
Single Acting	2.5	6	5.1	11	7.2	16	15.2	34	26.3	58	57	126	101	223	115	254	150	331

**NOTES:**

- 1) For sizes not shown, consult the factory
- 2) Weights are for actuators without handwheels

## WHO WE ARE

WZ Flow Control, Ltd., a subsidiary of WuZhong Instrument Company, Ltd., began business in 1959. As China's largest control valve manufacturer, WZ has a state of the art 2.8M ft<sup>2</sup> production, foundry and corporate office campus. With over 1000 employees, WZ is expanding globally with increased manufacturing, sales and service capabilities to better serve our rapidly growing global customer base.

As a member of the highly acclaimed China Automation Group ([www.cag.com.hk](http://www.cag.com.hk)), WZ has successfully supplied over 1 million valves for the global market. With our 100% Testing and Serialization Program, WZ prides itself on our high quality, competitively priced products with superior delivery from our new sales and service center located in Houston, Texas. Our Southern California office designs new products and makes continuous improvements to our broad existing product offering.

## LET'S WORK TOGETHER

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## WE'RE QUALIFIED

As a global manufacturing company, WZ Flow Control verifies that we are operating in full compliance with this partial list of industry standards. Our compliance includes additional standards not shown here. Please contact the factory for additional details.

> ISO 9001  
> ISO 14001  
> OHSAS 18001

> API Spec Q1  
> API 6A  
> API 6D

> API 6DSS  
> API 17D  
> API 609 Cat B

> API 607, 7<sup>th</sup> Edition  
> API 6FA, 3<sup>rd</sup> Edition  
> SIL-capable

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